

Rolling Rectangles

Reporting Category Measurement

Topic Finding area and perimeter

Primary SOL 5.8 The student will

- a) find perimeter, area, and volume in standard units of measure;
- b) differentiate among perimeter, area, and volume and identify whether the application of the concept of perimeter, area, or volume is appropriate for a given situation.

Related SOL 5.14

Materials

- Number cubes
- Rolling Rectangles recording sheet (attached)
- Grid paper (attached)

Vocabulary

area, perimeter, square, rectangle, dimensions

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Begin the lesson with a review of area and perimeter concepts.
2. Distribute copies of the Rolling Rectangles recording sheet and grid paper (attached), and have pairs of students play the game “Rolling Rectangles,” as follows:
 - Player 1 rolls two number cubes.
 - Using the rolled numbers as the dimensions (length and width) of a rectangle, player 1 sketches the rectangle on grid paper and labels the dimensions, area and perimeter.
 - Player 1 enters the area or perimeter of the rectangle as his/her score in one of the spaces on the recording sheet. If neither the area nor the perimeter will fit a category, player 1 enters it in the “Chance” space or enters a zero score in a space of his/her choice.
 - Players alternate rolls for five turns each.
 - The player with the highest score after five turns wins.

Assessment

- **Questions**
 - What is the difference between area and perimeter?
 - What are some strategies to use for filling in the recording sheet when playing “Rolling Rectangles”? Which categories have a lower probability of being rolled?
- **Journal/Writing Prompts**
 - Explain some relationships between the area and perimeter of the rectangles that you drew on the grid paper.
 - Describe a situation in which you would need to find the area.
 - Describe a situation in which you would need to find the perimeter.

- Describe a situation in which you would need to find the volume.
- **Other**
 - The community is adding a sandbox to the local park. To make the edge of the sandbox, they have 20 pieces of wood that are each two-feet long. On a piece of grid paper, show all the ways that you can arrange the pieces of wood into a rectangle. Which of the rectangles has the largest area?

Extensions and Connections (for all students)

- Have students draw all of the different rectangles with an area of 12 on grid paper, find the perimeters, and talk about the pattern. Then have them find all of the rectangles with a perimeter of 12, find the area, and talk about the pattern.
- Discuss the probability of different categories, which ones are easier to roll, and which are more difficult.

Strategies for Differentiation

- Have students draw rectangles on grid paper and find the perimeter and area without using the recording sheet.

Rolling Rectangles

Names _____ Date _____

Category	Player 1's Scores	Player 2's Scores
area = perimeter		
area = even number		
perimeter = one-digit number		
area = multiple of 3		
perimeter > area		
CHANCE		
area = odd number		
perimeter = even number		
perimeter = multiple of 5		
area > perimeter		
area = composite number		
area = prime number		
area = perfect square		
$p - a = 4$ or $a - p = 4$		
Grand Total		

